IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of		)
		) Examiner: M. Aboagye
Michael Leu, et al.		)
		)
for WIRE BONDER		) Group Art Unit: 1793
		)
		) Confirmation No.: 3767
		)
Serial No.:	10/802,205	) Our Docket No.: 4999-0030
		)
Filed:	March 17, 2004	)

Hartford, Connecticut, March 11, 2009

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

STATUS LETTER

Sir:

On September 4, 2008, Applicants submitted a Response to the Office action dated April 23, 2008, in the above-identified application. A copy of the Response is enclosed for your reference.

As of this date, there has been no further activity in this matter. Applicants therefore request a status report to be provided in the above-identified application.

Applicants believe no fees are due for the submission of this status letter, however, authorization is hereby given to charge our Deposit Account No. 13-0235 in the event any such fees are owed and to credit any overpayment.

Respectfully submitted,

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In the Application of	) Confirmation No.: 3767
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Michael Leu, et al.	) Art Unit: 1793
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Title: WIRE BONDER	) Examiner: M. Aboagye
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Serial No.: 10/802,205	)
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Filed on: March 17, 2004	) (Docket No. 4999-0030)

Hartford, Connecticut, September 4, 2008

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO OFFICE ACTION

S I R:

In response to the Office Action dated April 23, 2008, please amend the above-identified application as follows:

Claim amendments begin on page 2.

Remarks begin on page 9.

In the Claims:

1. (Currently Amended) A wire bonder for wiring semiconductor chips, comprising

a bondhead,

a power module configured for supplying electrical power for operating a drive of the bondhead,

a power switch configured for controlling the supply of electrical power by the power module to the drive,

a timer,

a control program, and

at least one emergency switch,

the at least one emergency switch being configured for producing upon activation a signal for causing the control program to complete a current bond cycle and then suspend the further wiring wherein the bondhead may be accelerated and decelerated one or more times until the current bond cycle is completed and for starting the timer, the timer being configured for opening the power switch after a predetermined period of time has elapsed, the predetermined period being sufficient to complete the current bond cycle.

2. (Previously Presented) The wire bonder according to claim 1, further comprising

an electrical power supply module guaranteeing on interruption of an external power supply the supply of electrical power to the wire bonder for a minimum predetermined period of time, and

a sensor for detecting a possible interruption of the external power supply, the control program completing the current bond cycle and then suspending the further wiring when the sensor reports an interruption of the external power supply.

3. (Previously Presented) The wire bonder according to claim 2, wherein the wire bonder is set up to instantaneously switch off all electrical consumers not required for completion of the current bond cycle when the sensor reports an interruption of the external power supply.

4. (Previously Presented) The wire bonder according to claim 1, further comprising a pressure sensor for measuring a pressure in a pressure supply line connected to the wire bonder, the control program completing the current bond cycle and then suspending the further wiring when the pressure measured by the pressure sensor falls below a predetermined value.

5. (Previously Presented) The wire bonder according to claim 2, further comprising a pressure sensor for measuring a pressure in a pressure supply line connected to the wire bonder, the control program completing the current bond cycle and then suspending the further wiring when the pressure measured by the pressure sensor falls below a predetermined value.

6. (Previously Presented) The wire bonder according to claim 3, further comprising a pressure sensor for measuring a pressure in a pressure supply line connected to the wire bonder, the control program completing the current bond

cycle and then suspending the further wiring when the pressure measured by the pressure sensor falls below a predetermined value.

7. (Previously Presented) The wire bonder according to claim 1, further comprising at least one vacuum sensor for monitoring a vacuum and a vacuum tank guaranteeing the supply of vacuum to the wire bonder for a minimum predetermined period of time on an interruption of an external vacuum supply, the control program completing the current bond cycle and then suspending the further wiring when the vacuum measured by the vacuum sensor falls below a predetermined value.

8. (Previously Presented) The wire bonder according to claim 2, further comprising at least one vacuum sensor for monitoring a vacuum and a vacuum tank guaranteeing the supply of vacuum to the wire bonder for a minimum predetermined period of time on an interruption of an external vacuum supply, the control program completing the current bond cycle and then suspending the further wiring when the vacuum measured by the vacuum sensor falls below a predetermined value.

9. (Previously Presented) The wire bonder according to claim 3, further comprising at least one vacuum sensor for monitoring a vacuum and a vacuum tank guaranteeing the supply of vacuum to the wire bonder for a minimum predetermined period of time on an interruption of an external vacuum supply, the control program completing the current bond cycle and then suspending the

further wiring when the vacuum measured by the vacuum sensor falls below a predetermined value.

10. (Previously Presented) The wire bonder according to claim 4, further comprising at least one vacuum sensor for monitoring a vacuum and a vacuum tank guaranteeing the supply of vacuum to the wire bonder for a minimum predetermined period of time on an interruption of an external vacuum supply, the control program completing the current bond cycle and then suspending the further wiring when the vacuum measured by the vacuum sensor falls below a predetermined value.

11. (Previously Presented) The wire bonder according to claim 5, further comprising at least one vacuum sensor for monitoring a vacuum and a vacuum tank guaranteeing the supply of vacuum to the wire bonder for a minimum predetermined period of time on an interruption of an external vacuum supply, the control program completing the current bond cycle and then suspending the further wiring when the vacuum measured by the vacuum sensor falls below a predetermined value.

12. (Previously Presented) The wire bonder according to claim 6, further comprising at least one vacuum sensor for monitoring a vacuum and a vacuum tank guaranteeing the supply of vacuum to the wire bonder for a minimum predetermined period of time on an interruption of an external vacuum supply, the control program completing the current bond cycle and then suspending the

further wiring when the vacuum measured by the vacuum sensor falls below a predetermined value.

13. (Previously Presented) The wire bonder according to claim 1, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

14. (Previously Presented) The wire bonder according to claim 2, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

15. (Previously Presented) The wire bonder according to claim 3, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

16. (Previously Presented) The wire bonder according to claim 4, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

17. (Previously Presented) The wire bonder according to claim 5, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

18. (Previously Presented) The wire bonder according to claim 6, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

19. (Previously Presented) The wire bonder according to claim 7, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

20. (Previously Presented) The wire bonder according to claim 8, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

21. (Previously Presented) The wire bonder according to claim 9, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

22. (Previously Presented) The wire bonder according to claim 10, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

23. (Previously Presented) The wire bonder according to claim 11, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

24. (Previously Presented) The wire bonder according to claim 12, further comprising a light curtain for detecting any access to a working area of the bondhead, the control program completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

REMARKS

Claims 1-24 are pending and remain for consideration. Claim 1 is being amended herein.

Applicants thank Examiner Aboagye for consideration of the arguments for patentability and proposed claim amendment raised by Applicants' counsel during the telephonic interview of August 19, 2008.

Claims 1-3 and 13-15 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Nakamura (US Patent No. 6,566,770). The rejection is traversed and reconsideration is respectfully requested, particularly in view of the clarifying amendments to the claims.

Claims 1-3 and 13-15 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Schmidt et al. (WO 03/015974). The rejection is traversed and reconsideration is respectfully requested, particularly in view of the clarifying amendments to the claims.

Claims 4-6 and 16-18 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Nakamura (US Patent No. 6,566,770) as applied to claim 1 above and further in view of Sugimoto et al. (US Patent No. 4,485,957). The rejection is traversed and reconsideration is respectfully requested, particularly in view of the clarifying amendments to the claims.

Claims 4-6 and 16-18 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Schmidt et al. (WO 03/015974) as applied to claim 1 above and further in view of

Sugimoto et al. (US Patent No. 4,485,957). The rejection is traversed and reconsideration is respectfully requested, particularly in view of the clarifying amendments to the claims.

Claims 7-12 and 19-24 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Nakamura (US Patent No. 6,566,770) as applied to claim 1 above and further in view of Behler et al. (US Pub. No. 2002/0093130). The rejection is traversed and reconsideration is respectfully requested, particularly in view of the clarifying amendments to the claims.

Claims 7-12 and 19-24 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Schmidt et al. (WO 03/015974) as applied to claim 1 above and further in view of Behler et al. (US Pub. No. 2002/0093130). The rejection is traversed and reconsideration is respectfully requested, particularly in view of the clarifying amendments to the claims.

Reconsideration of the above-identified claim rejections is respectfully requested in view of the following remarks. This Response incorporates by reference the remarks set forth in the Response to Office Action dated July 9, 2007 and the Response to Office Action dated February 27, 2008, and therefore such remarks will not be repeated fully herein. The remarks in this Response generally are to address the points raised in the telephonic interview with the Examiner on August 19, 2008.

Claim 1 is being amended to clarify the actions the bondhead takes to complete a bond cycle (wherein the bondhead may be accelerated and decelerated one or more times until the current bond cycle is completed). As

mentioned during the telephonic interview, although the specification does not contain the exact wording of the claim amendment, the general concept is explained in the specification. For example, paragraph [0008] of the published application states:

> As described in the introduction, a bond cycle is to be understood as one single bonding process with which the bond wire is attached to a connection point of the semiconductor chip, formed into a wire loop and attached to a connection point of the substrate and with which the wire is then also torn away from the finished wedge bond.

From the above-mentioned description, it follows that a single bond cycle inherently involves at least two down and up motions of a bondhead:

1) a first downward movement to form a first connection point;

2) a second upward movement to form a wire loop;

3) a third downward movement to form a second connection point; and

4) a fourth upward movement to complete the bond and tear the wire away from the finished wedge bond.

In view of the foregoing, it is respectfully submitted that there is support in the specification for the amended clarifying terminology of claim 1.

In response to the section headed "Response to Arguments" from the Office Action dated April 23, 2008, Applicants summarize the arguments already

presented in previous responses and discussed in the telephonic interview as follows:

1) With regard to Myazaki: Applicants do not understand the position of the Examiner. Myazaki's wire bonder of course contains some circuitry to control the motion of the bondhead. However, the circuitry shown in Miyazaki is not related to the motion of the bondhead at all.

2) With regard to Nakamura: Nakamura is related to a semiconductor manufacturing apparatus operable with supply of an electric power from a main electric power source wherein, in response to actuation of an emergency-off switch, the main electric power source is disconnected and, before the disconnection, braking control is made to a member being driven by use of an electric power from the main electric power source (see abstract).

If the teaching of Nakamura is applied to Miyazaki then the resulting wire bonder would immediately brake the bondhead so that it is stopped as soon as possible and then disconnect the main electric power source. The operation of the at least one emergency switch would not produce upon activation a signal for causing the control program to complete a current bond cycle and then suspend the further wiring.

3) With regard to Schmidt: The invention of Schmidt relates to a rapid arc welding system for welding elements onto components. The inventive system comprises a welding head, a supply device for supplying elements to the component and a control and power device. The control and power device comprises a safety circuit for controlling the safety functions of the welding system which allows an operation that is especially safeguarded from unauthorized use of the system in which an operation disruption is partially

cancelled. In this partial operation mode, individual components of the system can be activated selectively, especially for the purpose of maintenance (see abstract).

The emergency ON-OFF switch of Schmidt is preferably combined with the main switch (see page 5, lines 25 seq.). Upon activation of the emergency switch, the welding apparatus is immediately separated from the electrical power and therefore immediately stopped. The power is not shut down in a delayed manner.

As mentioned previously, in the Response to Office Action filed on July 9, 2007 the Applicants pointed out that Miyazaki does not mention the term "bondhead". Applicants maintain that this is true and correct. Miyazaki's disclosure is directed to a ball forming apparatus which is only a small part of a wire bonder. Although the wire bonder of Miyazaki has a bondhead, Miyazaki is silent as to the nature and operation of the bondhead. Figures 6 and 7 of Miyazaki do not disclose the electrical circuitry for controlling the motion of the bondhead. These figures show electrical circuitry which is needed for melting the wire protruding out of the capillary into a ball. Applicants therefore maintain that Miyazaki does not disclose and describe a power module for the operation of the bondhead.

Amended claim 1 of the present application recites the feature "*...the at least one emergency switch being configured for producing upon activation a signal for causing the control program to complete a current bond cycle and then suspend the further wiring wherein the bondhead may be accelerated and decelerated one or more times until the current bond cycle is completed and for starting the timer, the timer being*

configured for opening the power switch after a predetermined period of time has elapsed, the predetermined period being sufficient to complete the current bond cycle."

There is no prior art that discloses the feature that the at least one emergency switch be configured for producing upon activation a signal for causing the control program to complete the current bond cycle including accelerating and decelerating the bondhead one or more times and then suspend the further wiring. As mentioned above, a bond cycle comprises securing the wire to a first connection point, then feeding a predetermined length of the wire out of the capillary, forming the wire into a loop, securing a second piece of the wire to a second connection point and tearing the wire. When the wire is formed into a loop, the bondhead is accelerated and decelerated many times depending on the kind of loop. Completing the current bond cycle therefore means that the bondhead may be accelerated and decelerated one or more times before its motion is finished. In contrast to this, Nakamura discloses applying immediate braking control to a member being driven. Therefore Nakamura teaches to decelerate the member as soon as possible in order to avoid damage. Neither Nakamura nor any other of the cited prior art references taken either alone or in combination with Miyazaki teaches continuing with the normal operation until a certain task has been finished. In the present case this task is to complete the current bond cycle, as is recited in amended claim 1 and incorporated by reference in dependent claims 2-24.

In the Advisory Action dated January 28, 2008, the Examiner justifies the rejection by asserting on the last three lines of the last sheet that the feature "that the bondhead may be accelerated and decelerated one or more times before its motion is finished" is not included as a limitation in claim 1. This is true in one

sense and not true in another sense. It is true in that claim 1 does not contain a limitation with these exact words. It is not true in that claim 1 contains the equivalent limitation "the at least one emergency switch being configured for producing upon activation a signal for causing the control program to complete a current bond cycle and then suspend the further wiring." Nevertheless, claim 1 is being amended herein to include the terminology "wherein the bondhead may be accelerated and decelerated one or more times until the current bond cycle is completed." (It has already been established above that the specification supports the amended terminology to claim 1.) What movements the bondhead has to carry out and how many accelerations and decelerations are necessary to complete the current bond cycle depends on the point in time when the emergency switch creates the signal and on the movement path of the bondhead that is programmed to form the wire loop.

In view of the foregoing, it is respectfully submitted that claims 1-24 are not obvious in view of the cited references, and therefore are in condition for allowance. All issues raised by the Examiner having been addressed, an early action to that effect is earnestly solicited.

Applicants hereby petition for a two month extension of time to file this Response. Attorneys for Applicants hereby authorize the Commissioner to deduct the $460.00 fee from our Deposit Account No. 13-0235. No additional fees or deficiencies in fees are believed to be owed. However, authorization is hereby given to charge our Deposit Account No. 13-0235 in the event any such fees are owed.

Respectfully submitted,

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